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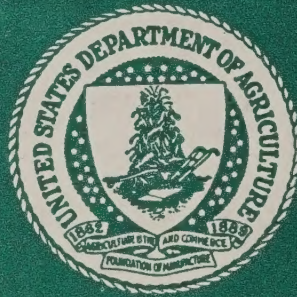
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FINAL REPORT TO USDA-SEA  
ON COOPERATIVE AGREEMENT  
No. 12-14-5001-279

JUL 07 1980

CATALOGING = PREP.

December 21, 1979

Cooperator: Richard G. Clarke, Department of Entomology, Oregon State University  
*R. G. Clarke* Covallis, Oregon 97331

Introduction:

This cooperative agreement was developed in April 1977 between the Oregon Agricultural Experiment Station and the USDA-SEA to have the Cooperator collect efficacy and phytotoxicity data on insecticides used against selected insect pests of ornamental crops which at that time lacked effective means of control, i.e., a specific nationally registered insecticide. A list of 4 pests on 5 ornamental crop species was developed and several candidate insecticides were chosen for evaluation (see pg 2 of agreement). This report does not parallel directly the original proposal. Over the 2½ year period of this agreement both registration needs and priorities have changed. Also, adequate pest populations necessary to show efficacy were lacking in some cases. But, professional judgement I hope ruled and the usefulness of the enclosed efficacy data, particularly the pitch moth trials, will assist the registration process or end the pursuit of registration for materials that really show no promise. In the case where materials such as acephate have been registered during the course of this agreement we can be thankful that the public interest has been served even though this particular agreement did not directly lead to that registration.

Results.- Tests Completed

In the attached appendices (7) are the "IR-4 National Pesticide Registration Program" forms for 7 efficacy test conducted during the agreement period:

Appendix 1 - 1977- Acephate - Golden Chain Leafminer

Appendix 2 - 1977- Phosmet - Adult Root Weevils

Appendix 3 - 1977- Phosmet - Adult Root Weevils

Appendix 4 - 1978- Chlorpyrifos - Sequoia Pitch Moth

Appendix 5 - 1978- Phosmet - Sequoia Pitch Moth

Appendix 6 - 1978- Chlorpyrifos - Sequoia Pitch Moth

Appendix 7 - 1979- " " " "





Cooperative Agreement  
No. 12-14-5001-279  
Final Report  
December 21, 1979  
Page 2.

Appendices 2,3,4,5, and 6 have been previously submitted in appropriate quarterly reports during the past 2½ years. They are again included for the sake of completeness.

Tests Not Conducted.- The work originally proposed for adult root weevils with acephate was completed in cooperation with Chevron Chemical Company and about 1 year ago acephate (Orthene®) was granted a national label which included adult root weevils on rhododendron and azalea.

Orthene was also tested and proved effective in other work, supported by other sources, and the data is currently being used by Chevron Chemical Company to get a 24C, local needs registration for Oregon and Washington, for acephate for root weevil larval control when applied as a drench treatment to container-grown nursery stock. I chose not to test chlorpyrifos or azinphosmethyl as originally proposed because of their higher human hazard as compared to acephate which has now proven effective.

One holly leafminer test was conducted in 1978 but not results were obtained. However, during this agreement period, Chevron acquired sufficient data elsewhere apparently to include it on their national label. Therefore, further work in 1979 was not needed. As I said, needs changed over the course of this work.

My report then, will deal with acephate against the golden chain leafminer, phosmet against adult root weevils, and phosmet and chlorpyrifos against the sequoia pitch moth.

Summary of Results and Conclusions:

Golden chain leafminer.- A single test (Appendix 1) was conducted in 1977. No fly population developed and therefore no data was collected. Acephate was not phytotoxic on golden chain. This is not a widely grown tree and nurseries which grow sufficient numbers where testing could be conducted did not have problems. Isolated homeowners over the years have reported problems but it was not practical to set up tests on 1 or 2 trees in scattered locations.





Adult Root Weevils.- The results of Phosmet on adult root weevils are reported in Appendices 2 and 3. The results were not significant because of the low feeding damage at the 2 test sites. It was my impression, however, that Phosmet is not as good as acephate (Orthene®) which is now registered for adult root weevil control. At these same locations we applied acephate also in other tests and even though the untreated plants had low feeding levels, acephate clearly was superior to Phosmet probably due to its local systemic effects giving a longer protection period.

My conclusion would be that Phosmet does not show sufficient promise to pursue registration for this particular useage.

Sequoia Pitch Moth.- This turned out to be a very difficult insect to work with because of its long life cycle (1-2 yrs) and the difficulty in assessing control (evaluations of efficacy).

We ran tests for 3 years at the same locations: SunRiver and Medford Oregon. The plots at SunRiver, Oregon were dropped in 1979 because of the decreased insect population level. The results in 1978 from SunRiver are reported in Appendix 4. We initially tested both Phosmet and Chlorpyrifos but Phosmet did not show any promise after 1977 and 1978 test years. Therefore, in 1979 it was dropped in favor of intensifying our efforts using chlorpyrifos which showed marginal promise at the Medford Plots (Appendix 6).

Only in 1979 (Appendix 7), did we show any control of this insect by the chemical used. Chlorpyrifos did reduce the numbers of larvae dug from pitch masses of treated trees as compared to the untreated trees.

My conclusion would be that Phosmet should not be evaluated further as it apparently has little control potential. Chlorpyrifos definitely should be considered for registration particularly if supportive data is available from other scientists at other locations.

At least 2 applications are necessary under Oregon conditions. The accumulative effect of yearly applications maybe the key to control of this insect. Protection for at least a 2 month period is necessary because of the long adult flight period.







# IR-4—NATIONAL PESTICIDE REGISTRATION PROGRAM

APPENDIX 1

PR NO: 1900A

## MINOR USE EFFICACY REPORT FORM—1

Date of Report: Dec 20, 1979

(For performance and phytotoxicity data)

Year Research Conducted: 1977

Project Title: Control of the Golden Chain Leafminer

Investigator (name, address, phone): Richard G. Clarke, Department of Entomology, Oregon State University, Corvallis, OR 97331 (503) 754-4392

Commodity/Site: Golden Chain (Laburnum)

Pest(s): Golden Chain Leafminer (Leucoptera laburnella)

Pesticide: Acephate EPA Reg. No. \_\_\_\_\_  
Formulation 75 S Rates (a.i.): 1.5, 0.75, 0.37 lb ai/100ga.

Manufacturer: (name, address) Chevron Chemical Co.

Location of Research: (name, address of exptl. location) Hans Nelson's Nursery, Boring, OR

Plot Size and Experimental Design: 3 trees per plot, completely randomized design, 4 Replications

Row Spacing: \_\_\_\_\_ Plant Spacing: \_\_\_\_\_

No. of Pesticide Applications 1 Dates of Application(s): May 18, 1977

Interval(s) Last Application to Sampling \_\_\_\_\_

Sampling Method: Observe leaves for larval mines

Type of Application: (foliar, soil incorp., etc.) Foliar

Method of Application: Ground, hydraulic powered sprayer with handgun

Application Equipment: (type, volume, pressure, etc.) hydraulic powered handgun at 50 psi

Other Pesticides Applied: (spray tank additives, stickers, etc.) none

Cultural Practices: (fertilization, cultivation, etc.) \_\_\_\_\_

Soil type: unknown

pH: \_\_\_\_\_ Organic matter: \_\_\_\_\_

Rainfall and Irrigation: overhead sprinkler irrigation

Summary of results: Use reverse side







Richard G. Clarke, Department of Entomology, Oregon St. Univ.  
Corvallis, OR 97331

1900A

PR Number

## Summary of results (narrative):

No leafminner population developed so no damage was noted in the treated or untreated trees. No phytotoxicity was observed on the trees.

Note: Use back of this form or attach additional pages if needed.

Return to:





Richard G. Clarke, Department of Entomology, Oregon St. University  
Investigator (Name and Address) Corvallis, OR 97331

1900 A  
PR Number

EXPERIMENTAL TABULAR DATA

<u>TREATMENTS</u>	<u>RATE<sup>1</sup></u> a.i.	<u>PERFORMANCE<sup>2</sup></u>				<u>PHYTOTOXICITY<sup>3</sup></u>				<u>YIELDS/QUALITY</u>			
		<u>REP 1</u>	<u>REP 2</u>	<u>REP 3</u>	<u>REP 4</u>	<u>REP 1</u>	<u>REP 2</u>	<u>REP 3</u>	<u>REP 4</u>	<u>REP 1</u>	<u>REP 2</u>	<u>REP 3</u>	<u>REP 4</u>
					<u>X</u>				<u>X</u>				<u>X</u>

See Summary of results (narrative)

<sup>1</sup>Indicate Units

<sup>2</sup>Performance Data (define measurement of pest population):

<sup>3</sup>Phytotoxicity Data (define measurement, or Index of injury):

Date(s) (Performance, Phytotoxicity and Yields) data were taken: Performance June 22, 1977

Phytotoxicity NONE was Noted Yield





# IR-4—NATIONAL PESTICIDE REGISTRATION PROGRAM

APPENDIX 2

1977

PR NO: 1865A

## MINOR USE EFFICACY REPORT FORM—1

Date of Report: Dec 12, 1978

Year Research Conducted: 1977

(For performance and phytotoxicity data)

Project Title: Control of Adult root weevils

Investigator (name, address, phone): Richard G. Clarke, Department of Entomology, Oregon State University, Corvallis, OR 97331 (503) 754-4392

Commodity/Site: Rhododendron

Pest(s): Root Weevils, *Otiorhynchus* spp, Obscure Root Weevil (*Sciopithes obscurus*)

Pesticide: IMIDAN / Phosmet EPA Reg. No. \_\_\_\_\_  
Formulation 50WP Rates (ai): 0.5, 1.0 and 2.0 lb ai/100 ga.

Manufacturer: (name, address) Stauffer Chemical Company

Location of Research: (name, address of exptl. location) Thompson Nursery, Waldport, Oregon

Plot Size and Experimental Design: Single plant plots, completely randomized design (4 reps)

Row Spacing: \_\_\_\_\_ Plant Spacing: \_\_\_\_\_

No. of Pesticide Applications 3 Dates of Application(s): 30 June, 28 July, 25 Aug 1977

Interval(s) Last Application to Sampling 1 month

Sampling Method: Count the number of feeding scars on leaf margins (notches) on random leaves

Type of Application: (foliar, soil incorp., etc.) Foliar

Method of Application: Ground, hydraulic powered sprayer with handgun  
hydraulic powered handgun at 50 psi

Application Equipment: (type, volume, pressure, etc.) \_\_\_\_\_

Other Pesticides Applied: (spray tank additives, stickers, etc.) none

Cultural Practices: (fertilization, cultivation, etc.) \_\_\_\_\_

Soil type: unknown

pH: \_\_\_\_\_ Organic matter: \_\_\_\_\_

Rainfall and Irrigation: overhead sprinkler irrigation

Summary of results: Use reverse side





Richard G. Clarke  
Department of Entomology, OSU, Corvallis, OR

1865A

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Investigator (Name and Address)

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PR Number

## Summary of results (narrative):

The weevil population was very low at this location resulting in great variation between plots within treatments. This probably accounts for the lack of significance between treatments.

Note: Use back of this form or attach additional pages if needed.

Return to:





EXPERIMENTAL TABULAR DATA

TREATMENTS	RATE <sup>1</sup> a.i.	PERFORMANCE <sup>2</sup>				PHYTOTOXICITY <sup>3</sup>				YIELDS/QUALITY			
		REP 1	REP 2	REP 3	REP 4	REP 1	REP 2	REP 3	REP 4	REP 1	REP 2	REP 3	REP 4
Imidan	2.0 lb				<u>X</u>				<u>X</u>				<u>X</u>
					1.00 <sup>a</sup>								
Imidan	1.0 lb				0.50 <sup>a</sup>								
Imidan	0.5 lb				1.00 <sup>a</sup>								
Untreated	-----				3.75 <sup>a</sup>								

<sup>a</sup>means followed by same letter were not significantly different at the 5% level

<sup>1</sup>Indicate Units

<sup>2</sup>Performance Data (define measurement of pest population):

One leaf whorl on each of the 3 treated plants in each replication (plot) was observed for feeding notches (Scars) on leaf margins. The total number of notches per plot was recorded.

<sup>3</sup>Phytotoxicity Data (define measurement, or index of injury):

NO PHYTOTOXICITY WAS NOTED.

Date(s) (Performance, Phytotoxicity and Yields) data were taken: Performance

Sept 28, 1977

Phytotoxicity After each application

Yield





Investigator (Name and Address)

APPENDIX 3

Summary of results (narrative):

A very low root weevil adult population developed on the plants with all feeding damage very low with little difference between treated and untreated plants.

Note: Use back of this form or attach additional pages if needed.

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EXPERIMENTAL TABULAR DATA

TREATMENTS	RATE <sup>1</sup> a.i.	PERFORMANCE <sup>2</sup>				<u>X</u>	PHYTOTOXICITY <sup>3</sup>				<u>X</u>	YIELDS/QUALITY				<u>X</u>
		REP 1	REP 2	REP 3	REP 4		REP 1	REP 2	REP 3	REP 4		REP 1	REP 2	REP 3	REP 4	
Imidan	2.0	1.8	0.4	0.8	0.6	0.9 ± 0.62										
Imidan	1.0	0.6	0.0	2.0	1.0	0.9 ± 0.84										
Imidan	0.5	0.4	1.0	1.2	1.2	0.95 ± 0.38										
Untreated	--	1.2	1.0	1.6	1.4	1.30 ± 0.26										

<sup>1</sup>Indicate Units<sup>2</sup>Performance Data (define measurement of pest population):

5 leaf whorls were rated for damage from each plant (replication).

Rating scale of 0-4 was used where 0= no feeding injury, 1= some feeding (acceptable) 2 or greater = unacceptable.

<sup>3</sup>Phytotoxicity Data (define measurement, or index of injury):

NO PHYTOTOXICITY WAS NOTED ON ANY PLANTS.

Date(s) (Performance, Phytotoxicity and Yields) data were taken: Performance

October 4, 1977

Phytotoxicity After each application.

Yield



# IR-4—NATIONAL PESTICIDE REGISTRATION PROGRAM

APPENDIX 4

PR NO: 6675A

## MINOR USE EFFICACY REPORT FORM—1

Date of Report: Oct 10, 1978

Year Research Conducted: 1978

(For performance and phytotoxicity data)

Project Title: Control of Sequoia Pitch Moth, *Synanthedon sequoiae* (Hy. Edwards)

Investigator (name, address, phone): Richard G. Clarke, Department of Entomology, Oregon State University, Corvallis, OR 97331 (503) 754-4392

Commodity/Site: Pinus

Pest(s): Sequoia Pitch Moth, *Synanthedon sequoiae* (Hy. Edwards)

Pesticide: Chlorpyrifos EPA Reg. No.                       
Formulation 4E Rates (a.i.): 0.5, 1.0 and 2.0 lb/100 gal.

Manufacturer: (name, address) Dow Chemical Company  
Location of Research: (name, address of exptl. location) SunRiver Estates, SunRiver, OREGON

Plot Size and Experimental Design: Single Trees (plots) Completely Randomized Design

Row Spacing:                      Plant Spacing:                     

No. of Pesticide Applications 1 Dates of Application(s): June 30, 1978

Interval(s) Last Application to Sampling 7 weeks

Sampling Method: Count the number of new pitch masses on each tree trunk

Type of Application: (foliar, soil incorp., etc.) Tree Trunk

Method of Application: Ground, hydraulic sprayer with handgun

Application Equipment: (type, volume, pressure, etc.) hydraulic powered handgun at 50 psi

Other Pesticides Applied: (spray tank additives, stickers, etc.) none

Cultural Practices: (fertilization, cultivation, etc.)                     

Soil type: unknown

pH: unknown Organic matter: unknown

Rainfall and Irrigation: no irrigation

Summary of results: Use reverse side





Investigator (Name and Address)

APPENDIX 4

Summary of results (narrative):

The insect population was low and not uniform. There was a difference in the treated verses the untreated trees as far as the number of "new" pitch masses counted. But one is suspicious of the reliability of the counts because there was a higher number of new masses on the trees with the 2.0 lb rate as compared to the 0.5 lb rate. Again, as was determined in the Medford, Oregon plot, the Chlorpyrifos does seem to be providing control and we are encouraged to put out trials again next year with 2 applications.

Note: Use back of this form or attach additional pages if needed.

Return to:





EXPERIMENTAL TABULAR DATA

TREATMENTS	RATE <sup>1</sup> a.i.	PERFORMANCE <sup>2</sup>					PHYTOTOXICITY <sup>3</sup>					YIELDS/QUALITY				
		REP 1	REP 2	REP 3	REP 4	<u>X</u>	REP 1	REP 2	REP 3	REP 4	<u>X</u>	REP 1	REP 2	REP 3	REP 4	<u>X</u>
Chlorpyrifos	0.5 lb/ 100 Gal.	1	0	0	0	0.25										
	1.0 lb/ 100 gal.	0	0	0	5	1.25										
	2.0 lb/ 100 gal	0	0	3	5	2.00										
Untreated		4	2	6	1	3.25										

<sup>1</sup>Indicate Units

<sup>2</sup>Performance Data (define measurement of pest population):

2 cm (Dime-size)

Number of "New" pitch masses on treated tree trunks - less than

<sup>3</sup>Phytotoxicity Data (define measurement, or index of injury):

No phytotoxicity

Date(s) (Performance, Phytotoxicity and Yields) data were taken: Performance Aug 24, 1978

Phytotoxicity Yield



# IR-4—NATIONAL PESTICIDE REGISTRATION PROGRAM

APPENDIX 5

PR NO: 1866A

## MINOR USE EFFICACY REPORT FORM—1

Date of Report: Oct 10, 1978

Year Research Conducted: 1978

(For performance and phytotoxicity data)

Project Title: Control of Sequoia Pitch Moth, *Synanthedon sequoiae* (Hy. Edwards)

Investigator (name, address, phone): Richard G. Clarke, Department of Entomology, Oregon State University, Corvallis, OR 97331 (503) 754-4392

Commodity/Site: Pinus

Pest(s): Sequoia Pitch Moth, *Synanthedon sequoiae* (Hy. Edwards)

Pesticide: Phosmet/Imidan <sup>(K)</sup> EPA Reg. No. \_\_\_\_\_  
Formulation 50 WP Rates (a.i.): 0.5, 1.0 and 2.0 lb/100 gal.

Manufacturer: (name, address) Stauffer Chemical Company

Location of Research: (name, address of exptl. location) Roque Valley Country Club Medford, OREGON

Plot Size and Experimental Design: Single Trees (plots) Randomized Complete Block

Row Spacing: \_\_\_\_\_ Plant Spacing: \_\_\_\_\_

No. of Pesticide Applications 1 Dates of Application(s): July 6, 1978

Interval(s) Last Application to Sampling 6 weeks

Sampling Method: Count the number of new pitch masses on each tree trunk

Type of Application: (foliar, soil incorp., etc.) Tree trunk

Method of Application: Ground, hydraulic sprayer with handgun

Application Equipment: (type, volume, pressure, etc.) Hydraulic powered handgun at 400 psi

Other Pesticides Applied: (spray tank additives, stickers, etc.) none

Cultural Practices: (fertilization, cultivation, etc.) \_\_\_\_\_

Soil type: unknown

pH: unknown Organic matter: unknown

Rainfall and Irrigation: sprinkler (overhead) as lawn irrigated

Summary of results: Use reverse side





Investigator (Name and Address)

APPENDIX 5

Summary of results (narrative):

No clear trend was evident in the data. The Phosmet seems to be less effective compared to the results received from the Chlorpyrifos at the same location (see 6675 A - 1978 data). It is not known at this time if we should include this chemical in 1979 testing since it would appear to be less effective. See 6675A (1978 data) for additional comments.

Note: Use back of this form or attach additional pages if needed.

Return to:





Investigator (Name and Address)

EXPERIMENTAL TABULAR DATA

TREATMENTS	RATE <sup>1</sup> a.i.	PERFORMANCE <sup>2</sup>					PHYTOTOXICITY <sup>3</sup>					YIELDS/QUALITY				
		REP 1	REP 2	REP 3	REP 4	X	REP 1	REP 2	REP 3	REP 4	X	REP 1	REP 2	REP 3	REP 4	X

Phosmet	0.5 lb/ 100 gallons	9	5	5	8	6.8										
	1.0 lb/ 100 gal.	6	4	4	3	4.3										
	2.0 lb/ 100 gal.	6	10	5	1	5.5										
Untreated		11	0	3	5	4.8										

<sup>1</sup>Indicate Units

<sup>2</sup>Performance Data (define measurement of pest population):  
Number of "new" pitch masses on treated tree trunks - less than  
2 cm in diameter (about dime-size)

<sup>3</sup>Phytotoxicity Data (define measurement, or Index of injury):  
No noticeable phytotoxicity

Date(s) (Performance, Phytotoxicity and Yields) data were taken: Performance Aug 17, 1978

Phytotoxicity Yield



# IR-4—NATIONAL PESTICIDE REGISTRATION PROGRAM

APPENDIX 6

PR NO: 6675 A

## MINOR USE EFFICACY REPORT FORM—1

Date of Report: Oct 10, 1978

(For performance and phytotoxicity data)

Year Research Conducted: 1978

Project Title: Control of Sequoia Pitch Moth, *Synanthedon sequoiae* (Hy. Edwards)

Investigator (name, address, phone): Richard G. Clarke, Department of Entomology, Oregon State  
Corvallis, OR 97331

Commodity/Site: Pinus

Pest(s): Sequoia Pitch Moth, *Synanthedon sequoiae* (Hy. Edwards)

Pesticide: Chloryprifos EPA Reg. No. \_\_\_\_\_  
Formulation 4E Rates (a.i.): 0.5, 1.0 and 2.0 lb ai/100ga

Manufacturer: (name, address) Dow Chemical Co.

Location of Research: (name, address of exptl. location) Rogue Valley Country Club  
Medford, OREGON

Plot Size and Experimental Design: Single tree plots, Randomized Complete Block

Row Spacing: \_\_\_\_\_ Plant Spacing: \_\_\_\_\_

No. of Pesticide Applications 1 Dates of Application(s): July 6, 1978

Interval(s) Last Application to Sampling 6 Weeks

Sampling Method: Count the number of new pitch masses on each tree trunk

Type of Application: (foliar, soil incorp., etc.) Tree trunk

Method of Application: Ground, hydraulic sprayer with handgun

Application Equipment: (type, volume, pressure, etc.) Hydraulic powered handgun at 400 psi

Other Pesticides Applied: (spray tank additives, stickers, etc.) None

Cultural Practices: (fertilization, cultivation, etc.) \_\_\_\_\_

Soil type: Unknown

pH: Unknown Organic matter: unknown

Rainfall and Irrigation: Sprinkler (Overhead)

Summary of results: Use reverse side





Richard G. Clarke, Department of Entomology,  
Oregon State University, Corvallis, OR 97331

6675 A  
PR Number

Investigator (Name and Address)

APPENDIX 6

Summary of results (narrative):

There was at the most a trend in the means which indicated that some control was provided by the 1 and 2X rates (1.0 and 2.0 lb ai/100 gal). Because of the long flight season (over 2 months) it may be that 2 applications will be necessary to show significant differences in treatments. The evaluation method used in 1978 was not totally satisfactory and others will be used next year.

Next year we propose to put on 2 applications of test materials at 4 week intervals starting in June to see if these materials will indeed provide adequate control.

Note: Use back of this form or attach additional pages if needed.

Return to:



Investigator (Name and Address)

EXPERIMENTAL TABULAR DATA

TREATMENTS	RATE <sup>1</sup> a.i.	PERFORMANCE <sup>2</sup>					<u>X</u>	PHYTOTOXICITY <sup>3</sup>					<u>X</u>	YIELDS/QUALITY					<u>X</u>
		REP 1	REP 2	REP 3	REP 4			REP 1	REP 2	REP 3	REP 4			REP 1	REP 2	REP 3	REP 4		
Chlorpyrifos	0.5	8	5	2	10		6.3												
	1.0	2	10	0	4		4.0												
	2.0	5	7	0	0		3.0												
Untreated		11	0	3	5		4.8												

APPENDIX 6

<sup>1</sup>Indicate Units<sup>2</sup>Performance Data (define measurement of pest population):

2 cm in diameter (about dime-size)

Number of "new" pitch masses on treated tree trunks - less than

<sup>3</sup>Phytotoxicity Data (define measurement, or Index of injury):

No noticeable phytotoxicity

Date(s) (Performance, Phytotoxicity and Yields) data were taken: Performance

Aug 17, 1978

Phytotoxicity

Yield





# IR-4—NATIONAL PESTICIDE REGISTRATION PROGRAM

APPENDIX 7

PR NO: 6675 A

## MINOR USE EFFICACY REPORT FORM—1

Date of Report: Dec 20, 1979

Year Research Conducted: 1979

(For performance and phytotoxicity data)

Project Title: Control of Sequoia Pitch Moth, *Synanthedon sequoiae* (Hy. Edwards)

Investigator (name, address, phone): Richard G. Clarke, Department of Entomology; Oregon State University, Corvallis, OR 97331

Commodity/Site: Pinus

Pest(s): Sequoia Pitch Moth, *Synanthedon sequoiae* (hy. Edwards)

Pesticide: Chloryprifos EPA Reg. No. \_\_\_\_\_  
Formulation 4E Rates (a.i.): 0.5, 1.0, 2.0 lb ai/100gal

Manufacturer: (name, address) Dow Chemical Co.

Location of Research: (name, address of exptl. location) Rogue Valley Country Club Medford, OREGON

Plot Size and Experimental Design: Single tree plots, Randomized Complete block

Row Spacing: \_\_\_\_\_ Plant Spacing: \_\_\_\_\_

No. of Pesticide Applications 2 Dates of Application(s): June 26, July 24, 1979

Interval(s) Last Application to Sampling 4 weeks

Sampling Method: Count the number of larvae in pitch masses on each tree trunk

Type of Application: (foliar, soil incorp., etc.) tree trunk

Method of Application: Ground, hydraulic sprayer with handgun

Application Equipment: (type, volume, pressure, etc.) Hydraulic powered handgun at 400 psi

Other Pesticides Applied: (spray tank additives, stickers, etc.) none

Cultural Practices: (fertilization, cultivation, etc.) \_\_\_\_\_

Soil type: unknown

pH: unknown Organic matter: unknown

Rainfall and Irrigation: sprinkler (Overhead)

Summary of results: Use reverse side



Investigator (Name and Address)

PR Number

APPENDIX 7

Summary of results (narrative):

Two applications at a 4 week interval of Chlorpyrifos provided pitch moth control during 1979. In table 1, the total larval counts and means are presented. These combined large (2nd yr) and small (current yr) larval counts. There was no difference in the control at the 3 rates tested. The 0.5 lb ai/100 gal rate was adequate. No phytotoxicity was evident at any tested rate. Although there was high variability between replications, on the average more live larvae were present on untreated trees.

In table 2, the number of small (new) larvae are presented. Here control is most evident. In 3 of the four replications, small larvae were collected in the untreated trees. More "new strikes" or fresh pitch flows of small diameter were also evident on the untreated trees. In 1977 and 1978 tests, control was not evident because of the apparent need of making 2 applications during the major adult moth flight period (June 15-August 15). Another factors is that we have been treated the same trees for 3 seasons and the combined effect of these annual treatments may be evident. In any event, the 0.5 ai rate will control this insect.

Note: Use back of this form or attach additional pages if needed.

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EXPERIMENTAL TABULAR DATA

TABLE 1. Combined larval counts.

TREATMENTS	RATE <sup>1</sup> a.i.	PERFORMANCE <sup>2</sup>					PHYTOTOXICITY <sup>3</sup>				YIELDS/QUALITY					
		REP 1	REP 2	REP 3	REP 4	X	REP 1	REP 2	REP 3	REP 4	X	REP 1	REP 2	REP 3	REP 4	X
Chlorpyrifos	0.5	5	1	3	0	2.0										
	1.0	0	9	1	0	2.5										
	2.0	3	4	1	1	2.3										
Untreated	-	8	1	6	2	4.3										

<sup>1</sup>Indicate Units

<sup>2</sup>Performance Data (define measurement of pest population):  
of live larvae were recorded

All pitch masses on treated and untreated were dug out and the number

<sup>3</sup>Phytotoxicity Data (define measurement, or index of injury):

No phytotoxicity was evident at any rate

Date(s) (Performance, Phytotoxicity and Yields) data were taken: Performance

Oct 25, 1979

Phytotoxicity

Yield



Investigator (Name and Address)

TABLE 2. EXPERIMENTAL TABULAR DATA

Number of small (new) Larvae

TREATMENTS	RATE <sup>1</sup> a.i.	PERFORMANCE <sup>2</sup>					$\bar{X}$	PHYTOTOXICITY <sup>3</sup>					$\bar{X}$	YIELDS/QUALITY					$\bar{X}$
		REP 1	REP 2	REP 3	REP 4			REP 1	REP 2	REP 3	REP 4			REP 1	REP 2	REP 3	REP 4		
Chlorpyrifos	0.5	1	1	0	0		0.5												
	1.0	0	1	1	0		0.5												
	2.0	1	0	0	0		0.3												
Untreated*	-	4	0	4	1		2.3												

\* new "strikes" or pitch flows were evident on the untreated trees

<sup>1</sup>Indicate Units<sup>2</sup>Performance Data (define measurement of pest population):  
number of small larvae were recorded.

All pitch masses on treated and untreated trees were dug out and the

<sup>3</sup>Phytotoxicity Data (define measurement, or Index of injury):

no phytotoxicity was evident at any rate

Date(s) (Performance, Phytotoxicity and Yields) data were taken: Performance

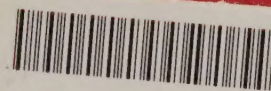
Oct 25, 1979

Phytotoxicity

Yield

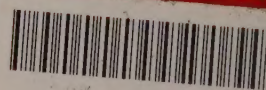






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